

WHAT IS CLAIMED IS:

1. A non-compliant medical balloon, where the non-compliant medical balloon may be changed from a deflated state to an inflated state by increasing pressure within the balloon, comprising:
 - a first fiber layer;
 - 5 a second fiber layer over said first fiber layer such that the fibers of the first fiber layer and the fibers of the second fiber layer form an angle;
 - a binding layer coating the first fiber layer and said second fiber layer;
 - wherein an interior surface area of the non-compliant medical balloon remains substantially unchanged when the balloon changes from a deflated state to an inflated
- 10 state.
2. The non-compliant medical balloon of claim 1, wherein said first fiber layer comprises inelastic fibers.
3. The non-compliant medical balloon of claim 1, wherein said first fiber layer comprises a plurality of parallel first fibers.
4. The non-compliant medical balloon of claim 1, further comprising an adhesive layer adhering to said first fiber layer.
5. The non-compliant medical balloon of claim 1, wherein said second fiber layer comprises a plurality of parallel second fibers.
6. The non-compliant medical balloon of claim 1, wherein said angle is substantially a right angle.
7. The non-compliant medical balloon of claim 1, wherein said angle does not change when the balloon changes from a deflated state to an inflated state.

8. The non-compliant medical balloon of claim 3, wherein said plurality of parallel first fibers are substantially parallel to the longitudinal axis of the balloon.
9. The non-compliant medical balloon of claim 5, wherein said plurality of parallel second fibers are substantially transverse to the longitudinal axis of the balloon.
10. The non-compliant medical balloon of claim 1, wherein said binding layer is a polymeric coating.
11. The non-compliant medical balloon of claim 10, wherein said polymeric coating is formed of a polymer.
12. The non-compliant medical balloon of claim 10, wherein said polymeric coating is formed of a copolymer.
13. The non-compliant medical balloon of claim 3, wherein said parallel first fibers each have a thickness of about 0.0005 inch.
14. The non-compliant medical balloon of claim 5, wherein said parallel second fibers each have a thickness of about 0.0005 inch.
15. The non-compliant medical balloon of claim 5, wherein said parallel second fibers have a wind density of approximately 50 wraps per inch.
16. The non-compliant medical balloon of claim 1, wherein said angle is about ten degrees.
17. The non-compliant medical balloon of claim 1, further comprising a third fiber layer on said second fiber layer.